

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(43) International publication date

17 February 2005 (17.02.2005)

PCT

(10) International publication number

WO 2005/015122 A1

(51) International patent classification⁷:
G01N 21/45

G01B 9/02,

BUNDESMINISTERIUM FÜR WIRTSCHAFT UND ARBEIT, dieses vertreten durch DEN PRÄSIDENTEN DER PHYSIKALISCH-TECHNISCHEN BUNDESANSTALT [DE/DE]; Bundesallee 100, 38116 Braunschweig (DE).

(21) International application number: PCT/DE2004/001321

(22) International filing date: 24 June 2004 (24.06.2004)

(25) Language of filing:

German

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(26) Language of publication:

German

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(30) Data relating to the priority:

103 34 350.4 25 July 2003 (25.07.2003)

DE

(81) Designated states (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY,

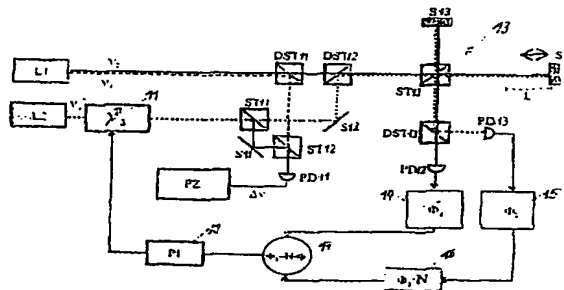
(71) Applicant (for all designated States except US):
BUNDESREPUBLIK DEUTSCHLAND, vertr. durch DAS .

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As printed

(54) Title: METHOD FOR DETERMINING THE REFRACTIVE INDEX DURING INTERFEROMETRIC LENGTH MEASUREMENT AND INTERFEROMETRIC ARRANGEMENT THEREFOR

(54) Bezeichnung: VERFAHREN ZUR BESTIMMUNG DER BRECHZAHL BEI INTERFEROMETRISCHEN LÄNGENMESSUNGEN UND INTERFEROMETERANORDNUNG HIERFÜR



(57) Abstract: The aim of the invention is to determine the refractive index and/or compensation of the influence of the refractive index during interferometric length measurement with the aid of an interferometer (13, 13') impinged upon by at least two measuring beams (v_2, v_3) having at least defined frequencies with an approximately harmonic ratio. Interferometric phases are evaluated for the at least two measuring beams (v_2, v_3) at the outlet of said interferometer. The interferometric phases corresponding to the harmonic ratio of the frequencies of the measuring beams (v_2, v_3) are multiplied and at least one phase difference of the thus formed phase value is examined. According to the invention, at least one of the measuring beams (v_3) can be modified in the frequency thereof and a control signal which is used to modify the frequency of the measuring beam (v_3) which can be modified in the frequency thereof is formed from the obtained phase difference and the measuring signal controls the frequency in such a manner that the phase difference is zero. It is also possible to determine the refractive index or the length measurement by measuring a frequency difference.

(57) Zusammenfassung: Zur Bestimmung der Brechzahl und/oder Kompensation des Brechzahl einflusses bei interferometrischen Längenmessungen mit Hilfe eines mit wenigstens zwei Messstrahlen (v_2, v_3) mit wenigstens definierten, etwa in einem harmonischen Verhältnis zueinander stehenden Frequenzen beaufschlagten Interferometers (13, 13'), an dessen Ausgang interferometrisch Phasen für die wenigstens zwei Messstrahlen (v_2, v_3) ausgewertet werden, wobei eine dem harmonischen Verhältnis der Frequenzen der Messstrahlen (v_2, v_3)

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BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- (84) Designated states (unless otherwise indicated, for every kind of regional protection available): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

of inventorship (Rule 4.17(iv)) for the following designation US

Published:

With International Search Report.

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH,

For an explanation of the two-letter codes and the other abbreviations, reference is made to the explanations ("Guidance Notes on Codes and Abbreviations") at the beginning of each regular edition of the PCT Gazette.

entsprechende Multiplikation der interferometrischen Phasen vorgenommen und wenigstens eine Phasendifferenz der so gebildeten Phasenwerte betrachtet wird, wird vorgesehen, dass wenigstens einer der Messstrahlen (v_2) in seiner Frequenz veränderbar ist und dass aus der gebildeten Phasendifferenz ein Steuersignal zur Veränderung der Frequenz des in seiner Frequenz veränderbaren Messstrahls (v_2) gebildet wird, mit dem die Frequenz so geregelt wird, dass die Phasendifferenz zu Null wird. Hierdurch kann die Ermittlung der Brechzahl oder die Längenmessung durch eine Messung einer Frequenzdifferenz erfolgen.